GUIDE FOR PROGRAM IMPROVEMENT FOR PERKINS IV: NONTRADITIONAL CTE PROGRAM PARTICIPATION AND COMPLETION

For use by states and locals in responding to
the accountability requirements of the
Carl D. Perkins Career and Technical
Education Improvement Act of 2006

Prepared by

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ACRONYMS/ABBREVIATIONS

CAR	Consolidated Annual Report	NPM	Negotiated Performance Measure
CIP	Classification of Instructional Program	NTO	Nontraditional Occupation
CTE	Career and Technical Education	OCR	Office of Civil Rights
LEA	Local Education Agency	SOC	Standard Occupational; Classification

INTRODUCTION

To comply with the accountability requirements of the Carl D. Perkins Career and Technical Education Improvement Act of 2006 (Perkins IV), states and locals will need to report on the participation and completion of students in nontraditional career and technical education (CTE) programs at the secondary and postsecondary level. States and locals will also need to disaggregate their data by gender, race/ethnicity and special population status. Similar data was collected under the Carl D. Perkins Vocational and Applied Technology Education of 1998. States set negotiated performance measures with the Office of Vocational and Adult Education of the U.S. Department of Education and reported annually on their performance.

The Perkins IV accountability requirements now include provisions requiring states and locals to do more than just report the data. The new requirements include the implementation of improvement plans when states or locals are not meeting their negotiated performance measures and eventually sanctions, or loss of funding. In addition, states and locals are required to use the data to identify performance gaps between the disaggregated populations and all CTE students when reporting data, developing state and local plans and when developing improvement plans.

This guide provides data analysis tools that states and locals may want to use when looking at the data collected for the participation and completion of students in nontraditional CTE programs and the disaggregated data elements to identify performance gaps in student performance. A suggested process for analyzing the data and developing improvement plans is also included.

SECTION I

STEPS TO COLLECTING AND REPORTING VALID AND RELIABLE DATA ON NONTRADITIONAL PARTICIPATION AND COMPLETION

STEPS TO COLLECTING AND REPORTING DATA ON THE NONTRADITIONAL INDICATOR IN PERKINS

STEP 1: Identify the measurement approach for your state for the Nontraditional Core Indicator for participation and for completion.

- Obtain your state's definitions for participation and completion
- Obtain your state's definition of the measure for nontraditional participation and completion
- Identify the student population in the numerator
- Identify the student population in the denominator

Sample

State Performance Measure: Nontraditional Participation

Numerator: *Total number of underrepresented gender students participating in nontraditional career and technical education (CTE) programs*

Denominator: *Total number of students participating in nontraditional CTE programs*

Sample

State Performance Measure: Nontraditional Completion

Numerator: *Total number of underrepresented gender students completing nontraditional CTE programs*

Denominator: *Total number of students completing nontraditional CTE programs*

STEP 2: Identify nontraditional programs by gender.

- Use the national Nontraditional Occupations/Classification of Instructional Program (CIP) Crosswalk (see Appendix A),
- Use your state's Nontraditional Occupations/CIP Crosswalk, or
- Develop your own local Nontraditional Occupations/CIP Crosswalk.[1]
  - o Obtain labor market information for nontraditional occupations.
    - BLS Labor Statistics[2]

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[1] See Guide to Crosswalking Nontraditional Occupations and Programs available at http://www.napequity.org/pdf/How%20to%20do%20a%20NTO%20Crosswalk.pdf for a more detailed description of how to develop your own local nontraditional occupations/CIP crosswalk.

- State Department of Labor Statistics
- Local Labor Market Statistics

  o Identify those occupations nontraditional by gender.[3]

  - Male: where males are less than 25% of the individuals employed
  - Female: where females are less than 25% of the individuals employed

  o Crosswalk nontraditional occupations with CTE programs.

  - Use Standard Occupational Classification (SOC) Codes for nontraditional occupations and CIP codes or other classification system for identifying CTE programs in your state.
  - The National Crosswalk Center has crosswalks completed for your use in this process.[4]

STEP 3: Determine current performance and historical performance if available

- Collect data on underrepresented gender students enrolled in nontraditional CTE programs.
  - o Males enrolled in programs identified as nontraditional for males
  - o Females enrolled in programs identified as nontraditional for females
- Collect disaggregated student data (see Appendix B).
  - o Gender: Male, female, unknown
  - o Race/Ethnicity: White, non-Hispanic; Hispanic; Black, non-Hispanic; Asian or Pacific Islander; American Indian or Alaskan Native
  - o Special Populations
    - Individuals with Disabilities: Perkins IV defines students with disabilities by referring to the Americans with Disabilities Act definition: An individual with a physical or mental impairment that substantially limits one or more of the major life activities of such individual.[5]
    - Economically Disadvantaged: Not defined in Perkins IV. Check with your state to determine what criteria to use for identifying these students. Typically

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[2]Available at http://www.bls.org.

[3]The term "nontraditional occupations" means occupations or fields of work, including careers in computer science, technology, and other current and emerging high-skill occupations, for which individuals from one gender comprise less than 25 percent of the individuals employed in each such occupation or field of work.

[4]Available at http://www.xwalkcenter.org.

[5]Available at http://www.eeoc.gov/policy/ada.html.

states use the same definition for economically disadvantaged students at the secondary level as is used for No Child Left Behind or that qualify students for the free and reduced lunch program in the state. At the postsecondary level the definition for economically disadvantaged students is usually related to PELL grant eligibility or other financial aid programs.

- Single Parent: Not defined in Perkins IV. Single parents are defined in other federal laws. For example: An individual who is unmarried or legally separated from a spouse; and has 1 or more minor children for whom the individual has custody or joint custody; or is pregnant.[6]

- Displaced Homemaker: An individual who has worked primarily without remuneration to care for a home and family, and for that reason has diminished marketable skills; has been dependent on the income of another family member but is no longer supported by that income; or is a parent whose youngest dependent child will become ineligible to receive assistance under part A of Title IV of the Social Security Act (42 U.S.C. 601 et seq.) not later than 2 years after the date on which the parent applies for assistance under such title; and is unemployed or underemployed and is experiencing difficulty in obtaining or upgrading employment.

- Limited English Proficient Student: A secondary school student, an adult, or an out-of-school youth, who has limited ability in speaking, reading, writing, or understanding the English language, and whose native language is a language other than English; or who lives in a family or community environment in which a language other than English is the dominant language.

- Migrant: Not defined in Perkins IV but is included due to the reference to the data collection elements in No Child Left Behind. The definition for migratory child in NCLB is: a child who is, or whose parent or spouse is, a migratory agricultural worker, including a migratory dairy worker, or a migratory fisher, and who, in the preceding 36 months, in order to obtain, or accompany such parent or spouse, in order to obtain, temporary or seasonal employment in agricultural or fishing work —

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[6]For a definition for single parent see U.S. Code, Title 12, Chapter 13, Section 1700(d)(9) available at http://www.thecre.com/fedlaw/uscode/12/index-2.html

(A) has moved from one school district to another;

(B) in a State that is comprised of a single school district, has moved from one administrative area to another within such district; or

(C) resides in a school district of more than 15,000 square miles, and migrates a distance of 20 miles or more to a temporary residence to engage in a fishing activity.[7]

- Student Pursuing Nontraditional Careers: The term "nontraditional fields" means occupations or fields of work, including careers in computer science, technology, and other current and emerging high skill occupations, for which individuals from one gender comprise less than 25 percent of the individuals employed in each such occupation or field of work.

- Tech Prep Student: A student participating in a Tech Prep program as described in Sec. 203 of the Perkins Act.[8]

STEP 4 Set a baseline to be used as a benchmark for measuring progress and negotiating future performance measures

- Aggregate data for all populations and programs.
    o Percentage of students participating in nontraditional CTE programs
    o Percentage of students completing nontraditional CTE programs
- Average multiple years of data (see Table 3 on page 19 for an example of a multiyear analysis for setting a baseline).

STEP 5: Negotiate your local performance measure using the baseline developed in STEP 4.

- Participation of students in nontraditional CTE programs
- Completion of students in nontraditional CTE programs

STEP 6: Compare your current performance for participation and completion of students in nontraditional CTE programs to the negotiated performance measure (NPM) set in STEP 5.

- Disaggregate data and identify performance gaps by:
    o School: See Table 3 on page 19 for a sample.

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[7] From NCLB available at http://www.ed.gov/policy/elsec/leg/esea02/pg8.html#sec1309
[8] Available at http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=109_cong_bills&docid=f:s250enr.txt.pdf.

- o Program: See Tables 4a and 4b on pages 20 and 21 for a sample.
- o Course: See Tables 5a and 5b on pages 22 and 23 for a sample.
- o Student Populations
  - Gender: See Tables 3, 4 and b, and 5a and b on pages 19 to 23 for a sample.
  - Race/Ethnicity: See Tables 5 a and b, 6 a and b, and 7a and b on pages 21-26 for a sample.
  - Special Populations: See Tables 5 a and b, 6 a and b, and 7a and b on pages 21-26 for a sample.

STEP 7: Develop improvement plans for programs performing below the local negotiated performance measure for all nontraditional CTE programs. (See Section III for the 5-Step Process: Improving Performance on Nontraditional Participation and Completion.)

SECTION II

PROMOTING EQUITY IN CAREER AND TECHNICAL EDUCATION THROUGH DATA ANALYSIS

ANALYZING DATA TO IDENTIFY PERFORMANCE GAPS IN NONTRADITIONAL CAREER AND TECHNICAL EDUCATION PROGRAMS

Historically, there has been confusion for local program providers about the difference in looking at enrollment patterns for gender, race/ethnicity and special populations in CTE programs for civil rights purposes, such as an Office of Civil Rights (OCR) review, and looking at participation and completion patterns in nontraditional programs for Perkins accountability purposes.

The goal of this paper is to clarify how to use each method of analysis to promote equity in CTE programs. A review of methodology to analyze data for under/overrepresentation for civil rights review purposes at both the secondary and postsecondary is explained. Sample data tables and narrative analysis of the samples are given to assist you in replicating the same process at your local school. A review of methodology to analyze data for Perkins accountability purposes at the secondary and postsecondary level is also explained in detail. Sample data analysis tables and narrative analysis are given to show how to review gender, race/ethnicity, and special populations disaggregated data to help you identify gaps in performance and potential areas where program improvement efforts could be focused. After reviewing the samples shown here, you will be prepared to make the same analysis of the CTE programs at your school, district, or college.

UNDER/OVERREPRESENTATION OF STUDENTS IN CTE (CIVIL RIGHTS)

There are several Federal civil rights laws[9], enforced by the Office for Civil Rights[10] of the U.S. Department of Education, that prohibit discrimination in programs or activities that receive federal financial assistance from the Department of Education. Discrimination on the basis of race, color, and national origin is prohibited by Title VI[11] of the Civil Rights Act of 1964; sex discrimination is prohibited by Title IX[12] of the Education Amendments of 1972; discrimination on the basis of disability is prohibited by Section 504[13] of the Rehabilitation Act of 1973; and age discrimination is prohibited by the Age Discrimination Act[14] of 1975. These civil rights laws enforced by OCR extend to all state education agencies, elementary and secondary school systems, colleges and universities,

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[9]Available at http://www.ed.gov/about/offices/list/ocr/know.html.

[10] For more information about the Office for Civil Rights go to http://www.ed.gov/about/offices/list/ocr/aboutocr.html

[11]Available at http://usinfo.state.gov/usa/infousa/laws/majorlaw/civilr19.htm and http://www.ed.gov/policy/rights/reg/ocr/edlite-34cfr100.html.

[12]Available at http://www.ed.gov/policy/rights/reg/ocr/edlite-34cfr106.html and http://www.usdoj.gov/crt/cor/coord/titleixstat.htm

[13]Available at http://www.ed.gov/policy/rights/guid/ocr/disability.html.

[14] Available at http://www.ed.gov/about/offices/list/ocr/agediscrimination.html

vocational schools, proprietary schools, state vocational rehabilitation agencies, libraries, and museums that receive U.S. Department of Education funds. Areas covered may include, but are not limited to: admissions, recruitment, financial aid, academic programs, student treatment and services, counseling and guidance, discipline, classroom assignment, grading, vocational education, recreation, physical education, athletics, housing, and employment. OCR also has responsibilities under Title II of the Americans with Disabilities Act[15] of 1990 (prohibiting disability discrimination by public entities, whether or not they receive federal financial assistance). OCR has developed guidelines[16] that explain the civil rights responsibilities of recipients of Federal funds offering or administering career and technical education programs.

When looking at enrollment patterns, the assumption is made that, if all things were equal, you should expect about the same percentage of students of a particular ethnic/racial group or disability enrolled in the school to be also enrolled in the CTE program. A recommended baseline for gender is an 80/20 test, where no more than 80% of one gender will be enrolled in a course or program. A recommended baseline for ethnicity, race, and disability is +/- 10% of the enrollment for that group. For instance, if a school has an enrollment of 26% African American students, it should expect that all CTE programs would have no less than 16% and no more than 36% of African Americans enrolled in its programs.

At the local level, comparing enrollment data in an institution to the enrollment data in a local program can help program personnel ascertain whether their program's demographics indicate an overrepresentation or underrepresentation of a particular group. With this knowledge, steps can be taken to ensure that enrollment patterns showing under- or overrepresentation is not the result of program policies or practices. (For an example of how this is done, see Tables 1a and 1b, secondary and postsecondary examples of gender comparisons, and Table 2a and 2b, secondary and postsecondary examples of race/ethnicity comparisons.)

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[15]Available at http://www.ed.gov/policy/rights/guid/ocr/disability.html.
[16] Available at http://www.ed.gov/about/offices/list/ocr/docs/vocre.html

CTE Program Enrollment Analysis: Gender Comparisons

The data below indicate a need to review the program policies and practices (including the counseling and scheduling process) at both the secondary and postsecondary levels to ensure there was no discrimination in the overrepresentation of males in the courses. This is true for secondary even though the program as a whole meets the gender test of more than 20% enrollment of women. The fact that females are underrepresented in the upper-level course work but not in the lower-level course work would indicate a need to study retention issues. At the postsecondary level, the overall lack of participation of females in all courses indicates a need to study program recruitment as well as program policies and practices.

TABLE 1a ABC Secondary School District Enrollment Comparison 2006-2007—Gender, Automotive Technology Secondary

Course	Total # Enrolled	# Males	# Females	% Males	% Females	Comment[17]
Automotive Technology I	63	42	21	66.67%	33.33%	OK
Automotive Technology II	58	41	17	70.69%	29.31%	OK
Automotive Technology III	41	33	8	80.49%	19.51%	Over M
Automotive Technology IV	23	21	2	91.30%	8.70%	Over M
Total Program (unduplicated)	185	137	48	74.05%	25.94%	OK

TABLE 1b ABC Community College Enrollment Comparison 2006-2007—Gender, Automotive Technology Postsecondary Certificate of Achievement

Course	Total # Enrolled	# Males	# Females	% Males	% Females	Comment[12]
Electricity, Electronics, and Computer Controls	26	24	2	92.31%	7.69%	Over M
Transmissions and Power Trains	24	24	0	100.00%	0.00%	Over M
Engine Performance, Diagnosis, and Tune-Up	24	24	0	100.00%	0.00%	Over M
Basic Automotive Engines	30	30	0	100.00%	0.00%	Over M
Manual Transmissions and Power Trains	26	24	2	92.31%	7.69%	Over M
Technical Mathematics	24	24	0	100.00%	0.00%	Over M
Total Program (unduplicated)	30	28	2	93.33%	6.67%	Over M

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[17]OK= within the 80/20 test; Over M = overrepresentation of males; Over F = overrepresentation of females.

CTE Program Enrollment Analysis: Race/Ethnicity Comparisons

Table 2a illustrates how to compare the Hispanic population enrolled in the Automotive Technology program to those enrolled in the school. In this example, the secondary program meets the test, but there is underrepresentation of Hispanic students at the upper-level course offerings. The school/district needs to ascertain why Hispanic students are not enrolling at that level and take steps to ensure that it is not a result of unsatisfactory program policies, practices, or counseling that contribute to the declining enrollment.

TABLE 2a ABC Secondary School District Enrollment Comparison 2006-2007—Hispanic Student Enrollment, Automotive Technology Secondary

Course	Total # Enrolled in Program	# Hispanics	% Hispanics	% Hispanics Enrolled in School	Falls between 18.34% and 38.34%?
Automotive Technology I	63	21	33.34%	28.34%	Yes
Automotive Technology II	58	19	34.48%	28.34%	Yes
Automotive Technology III	41	6	14.63%	28.34%	No, under
Automotive Technology IV	23	1	4.34%	28.34%	No, Under
Total Program (unduplicated)	185	47	25.40%	28.34%	Yes

The data in Table 2b indicate an overrepresentation of Hispanic students for the college program overall. However, there is only one course that has an overrepresentation of Hispanic students. The college needs to further explore why there are more Hispanic students enrolled in the Basic Automotive Course and not in the other courses available in the program. The college could take this comparison a step further by analyzing how many Hispanics are eligible for enrollment in the community college compared to those that are enrolling to ascertain whether or not it provides adequate outreach in admissions to the Hispanic population in its enrollment area. Again, the analysis of courses where Hispanic students are under-enrolling or over-enrolling in a particular course could help staff determine whether any program policies or practices are contributing to this enrollment pattern and take corrective steps if needed.

TABLE 2b ABC Community College Enrollment Comparison 2006-2007—Hispanic Student Enrollment, Automotive Technology Postsecondary (Certificate of Achievement)

Course	Total # Enrolled in Program	# Hispanics	% Hispanics	% Hispanics Enrolled in School/College	Falls between 11.56% and 31.56%?
Electricity, Electronics, and Computer Controls	26	8	30.77%	21.56%	Yes
Transmissions and Power Trains	24	6	25.00%	21.56%	Yes
Engine Performance, Diagnosis, and Tune-Up	24	6	25.00%	21.56%	Yes
Basic Automotive Engines	30	12	40.00%	21.56%	No, over
Manual Transmissions and Power Trains	26	8	30.77%	21.56%	Yes
Technical Mathematics	24	6	25.00%	21.56%	Yes
Total Program (unduplicated)	30	12	40.00%	21.56%	No, over

NONTRADITIONAL PARTICIPATION AND COMPLETION PATTERNS (PERKINS ACCOUNTABILITY)

In the 1998 and 2006 Perkins reauthorizations, Congress included in the federal, state, and local accountability system for CTE a Core Indicator for "student participation in, and completion of, career and technical education programs that lead to employment in nontraditional fields." Nontraditional fields is defined as "occupations or fields of work, including careers in computer science, technology, and other current and emerging high skill occupations, for which individuals from one gender comprise less than 25 percent of the individuals employed in each such occupation or field of work."[18]

Nontraditional CTE programs are not defined by the enrollment pattern within the classes or programs, but rather the employment numbers in the workplace. Before looking at participation patterns, the program must be identified as a nontraditional program. Local schools/districts/colleges need to identify which programs they offer that meet this definition. Depending on the policy in your state this may be (1) left to the local district or college, (2) based on a state-identified list, or (3) based on a national list. The process for identifying nontraditional CTE programs by doing a crosswalk with labor statistics and Classification of Instructional Program (CIP) codes and a sample national crosswalk is available on the National Alliance for Partnerships in Equity's (NAPE) website.[19]

To implement the 1998 Perkins Act, each state identified a benchmark in 1999 and negotiated annual performance measures (or a percentage to meet or exceed) for both the participation **and** completion of underrepresented gender[20] students in nontraditional programs. States report this information to the U.S. Department of Education in their Consolidated Annual Reports. States are required to report

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[18]From Public Law 109-270, available at http://thomas.loc.gov.
[19]See "How to Develop a NTO Crosswalk" at
http://www.napequity.org/pdf/How%20to%20do%20a%20NTO%20Crosswalk.pdf. See
http://www.napequity.org/pdf/NontradforfemalesfromBLS08-05rev.pdf and
http://www.napequity.org/pdf/NontradformalesfromBLSREV08-05.pdf for a sample national crosswalk.
[20]Underrepresented gender refers to students in a nontraditional program that prepare them for an occupation where their gender is represented by less than 25% of the workforce. For example the underrepresented gender students in automotive technology programs would be females, while the underrepresented gender students in nursing programs would be males.

the data disaggregated by gender, race/ethnicity and special population[21] status. State annual report data is available at www.edcountability.net.

For purposes of the illustrations in this paper, participation is defined as enrollment in a CTE course that is part of a program of study leading to a nontraditional career. All examples shown analyze enrollment data. The same analysis can also be done using concentrators or completers to identify gaps in performance for students by gender, race/ethnicity, and special populations. Although data is collected at the course level, aggregated and then reported, the data is presented here first at the aggregated level first and then at the course level. Presenting the sample data tables in this order helps to illustrate the importance of disaggregating data to identify performance gaps. As the data is disaggregated, more and more can be learned about the trends in student course-taking patterns and performance.

Analyzing Perkins Data to Identify Performance Gaps by Gender in Nontraditional CTE Programs

CTE Nontraditional Program Enrollment: Total and Gender Comparisons

Table 3 shows the institutional enrollments of underrepresented gender students in nontraditional programs over time. In looking at the percentages of enrollment over time, the postsecondary institution is able to see the enrollment patterns of all of the programs offered. The 3 years of data illustrate that nontraditional program enrollment for females has increased steadily over time while the nontraditional program enrollment for males has been more volatile. Table 3 also illustrates how a local educational agency or state agency can use multiple years of data to set appropriate baselines when negotiating performance with the state or federal government for the purposes of accountability under Perkins IV. In this example, if a state or local agency had only used the current year's data available (2004-2005) the baseline would have been set at 10.39%, significantly higher than the 3-year average of 8.73%. It is important as states and locals prepare to negotiate performance measures under Perkins IV that multiple years of data be available so accurate and reliable baselines can be determined.

While the information in Table 3 will assist in setting appropriate baselines, the data is not helpful in the identification of useful strategies for enrollment and retention. For effective program

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[21]Special populations are defined in Perkins IV as: (a) individuals with disabilities; (b) individuals from economically disadvantaged families, including foster children; (c) individuals preparing for nontraditional fields; (d) single parents, including single pregnant women; (e) displaced homemakers; and (f) individuals with limited English proficiency.

improvement, looking at the data in a more disaggregated fashion as illustrated in the following tables is necessary.

TABLE 3 XYZ Community College Enrollment Comparison 2006-2007—Underrepresented Gender Student Enrollment, All Nontraditional Programs, Comparison over Time

	2002-2003	2003-2004	2004-2005	Baseline (3-year average)
Nontraditional for Females	7.73%	9.20%	10.76%	
Nontraditional for Males	8.65%	4.04%	9.52%	
Total	8.02%	7.78%	10.39%	8.73%

CTE Nontraditional Program Enrollment: Program and Gender Comparisons

Table 4a illustrates how the total for all programs may be misleading and how important it is for districts to analyze their Perkins data at the course level. In this case, the nontraditional programs for females exceed the state negotiated performance measure, but none of the nontraditional programs for males meet the state negotiated performance measure. In this example, resources and strategies would need to be developed so that males as well as females participate in these programs. It may be that the curriculum needs to be updated so that males see the relevancy of taking these courses at the secondary level. It may be that the stereotype of being "female" needs to be addressed. The data alone does not answer the question. Further research would be required.

TABLE 4a XYZ Secondary School District Enrollment Comparison 2006-2007—Underrepresented Gender Student Enrollment, All Nontraditional Programs

Program	Total # Enrolled	# Underrepresented Gender[22]	% Underrepresented Gender	State Negotiated Performance Measure	Met = M Not Met = N Exceeded = E
Agriculture (F)	225	97	43.11%	24.56%	E
Automotive Technology (F)	185	48	25.94%	24.56%	E
IT Academy (F)	24	8	33.34%	24.56%	E
Total in Nontraditional for Females	434	154	35.48%	24.56%	E
Nurses Aide (M)	35	1	2.86%	24.56%	N
Business and Office (M)	145	3	2.07%	24.56%	N
Total in Nontraditional for Males	180	4	2.22%	24.56%	N
Total for Males and Females	614	158	25.73%	24.56%	E

Table 4b shows the program aggregate for all of the nontraditional programs offered by the college. Looking at the individual program areas shows which programs are making progress in the enrollment of underrepresented gender students. By looking at the program detail, resources can be targeted to the areas that are most in need, such as Tool and Die as opposed to the Cisco Academy or Commercial Horticulture. However, it may be helpful to share the strategies used in these programs (Cisco Academy and Commercial Horticulture) with the faculty in the other CTE programs.

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[22]Number of students who are of the underrepresented gender for that particular program. For those with (F), it would be the number of females in the program. For those with (M), it would be the number of males in the program.

TABLE 4b XYZ Community College Enrollment Comparison 2006-2007—Underrepresented Gender Student Enrollment, All Nontraditional Programs

Program	Total # Students Enrolled	# Underrepresented Gender[23]	% Underrepresented Gender	State Negotiated Performance Measure	Met = M Not Met = N Exceeded = E
Auto Mechanics (F)	30	2	6.67%	11.75%	N
Carpentry (F)	16	1	6.25%	11.75%	N
Cisco Academy (F)	50	14	28.00%	11.75%	E
Commercial Horticulture (F)	60	9	15.00%	11.75%	E
Tool and Die (F)	95	1	1.05%	11.75%	N
Total in Nontraditional for Females	251	27	10.76%	11.75%	N
LPN (M)	60	9	15.00%	11.75%	E
Childcare (M)	45	1	2.22%	11.75%	N
Total in Nontraditional for Males	105	10	9.52%	11.75%	N
Total for Males and Females	356	37	10.39%	11.75%	N

CTE Nontraditional Program Enrollment: Course Comparisons

Tables 5a and 5b show how a secondary or postsecondary institution can use the state negotiated performance measure to evaluate its performance on the nontraditional core indicator. The 2006 Perkins Act includes a new local accountability requirement that mandates local programs to use either the state negotiated performance measure or negotiate a local performance measure with the state. First, the local education agency must determine its current performance by ascertaining the programs enrollment pattern by gender. This should be done for as many years as the data is available to ensure that the baseline or benchmark is as accurate as possible. Using multiple-year trend data will eliminate possible 1-year anomalies that can skew the data and make baselines inaccurate, potentially making it impossible to meet the performance measure negotiated on the baseline.

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[23]Number of students who are of the underrepresented gender for that particular program. For those with (F), it would be the number of females in the program. For those with (M), it would be the number of males in the program.

TABLE 5a XYZ Secondary School District Enrollment Comparison 2006-2007—
Underrepresented Gender Student Enrollment, Automotive Technology Secondary

Course	Total # Enrolled	# Underrepresented Gender[24]	% Underrepresented Gender	State Negotiated Performance Measure	Met = M Not Met = N Exceeded = E
Automotive Technology I	63	21	33.33%	24.56	E
Automotive Technology II	58	17	29.31%	24.56	E
Automotive Technology III	41	8	19.51%	24.56	N
Automotive Technology IV	23	2	8.70%	24.56	N
Total	185	48	25.94%	24.56	E

Table 5a illustrates how a program can exceed the state's negotiated performance measure, but course-level enrollment patterns show us there is still work to be done. The local program staff would need to explore why underrepresented gender students (in this case, females) are enrolling in Automotive Technology I and II and are not completing the program course sequence. For instance, exit interviews with underrepresented gender students might be a strategy to identify the factors that either encourage or discourage women to complete all four courses.

Table 5b illustrates how the enrollment patterns for underrepresented gender students by course gives us more revealing information about enrollment patterns in this nontraditional program. This data might suggest that the college is attracting females to the automotive technology program for purposes other than obtaining a certificate or it may mean that females are risking examining the program but are choosing not to "stay the course." College personnel would need to explore the reasons for the data and take steps to encourage the enrollment and retention of female students in the automotive technology program.

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[24]Number of students who are of the underrepresented gender for that particular program. Since Automotive Technology is nontraditional for females, the underrepresented gender students enrolled are the females in this example.

TABLE 5b XYZ Community College Enrollment Comparison 2006-2007—Underrepresented Gender Student Enrollment, Automotive Technology Postsecondary

Course	Total # Enrolled	# Underrepresented Gender[25]	% Underrepresented Gender	State Negotiated Performance Measure	Met = M Not Met = N Exceeded = E
Electricity, Electronics, and Computer Controls	26	2	7.69%	11.75%	N
Transmissions and Power Trains	24	0	0.00%	11.75%	N
Engine Performance, Diagnosis, and Tune-Up	24	0	0.00%	11.75%	N
Basic Automotive Engines	30	0	0.00%	11.75%	N
Manual Transmissions and Power Trains	26	2	7.69%	11.75%	N
Technical Mathematics	24	0	0.00%	11.75%	N
Total Program (unduplicated)	30	2	6.67%	11.75%	N

It is important to remember that the disaggregation of the data will provide the most and best information for program improvement for the participation and retention of nontraditional students. Charting the patterns to the course level will give program planners the information needed to identify strategies and resources to encourage the participation in and completion of nontraditional CTE programs.

Analyzing Perkins Data to Identify Performance Gaps by Race/Ethnicity or Special Population Students in Nontraditional CTE Programs

CTE Program Enrollment: Race/Ethnicity Comparisons

Additional information may also be important to see the complete picture of who is and who is not enrolling in nontraditional programs. Disaggregating the participation and completion data by gender, race/ethnicity, and special populations will be helpful in deciding recruitment and retention strategies.

The following tables illustrate the technique for analyzing student race/ethnicity and special population enrollment data three different ways: (1) the enrollment of Hispanic students in CTE

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[25]Number of students who are of the underrepresented gender for that particular program. Since Automotive Technology is nontraditional for females, the underrepresented gender students enrolled are the females in this example.

programs (Tables 6a and 6b), (2) the enrollment of Hispanic students in nontraditional CTE programs (Tables 7a and 7b), and (3) the enrollment of underrepresented gender Hispanic students in nontraditional CTE programs (Tables 8a and 8b). The three-layered approach to looking at disaggregated data for race/ethnicity and special population students can show you trends in student enrollment in CTE at each of these levels—potentially assisting districts and colleges to see where the gaps start to occur.

Tables 6a and 6b show the enrollment of all Hispanic students in the CTE programs. The secondary enrollments show that Automotive Technology, Nurse's Aide, and Marketing programs are recruiting what we would expect given the percentage of Hispanic students enrolled in secondary School District XYZ. Overall, the CTE programs are enrolling Hispanic students at the rate that they are enrolled in the district.

TABLE 6a XYZ Secondary School District Enrollment Comparison 2006-2007—Hispanic Student Enrollment, CTE Programs

Program	Total # Enrolled	# Hispanics (unduplicated) Male and Female	% Hispanics	% Hispanics Enrolled in District	Falls between 18.34% and 38.34%?
Agriculture	225	19	8.44%	28.34%	No, under
Automotive Technology	185	47	25.40%	28.34%	Yes
IT Academy	24	1	4.17%	28.34%	Nor, under
Nurse's Aide	35	9	25.71%	28.34%	Yes
Business and Office	145	47	6.21%	28.34%	No, under
Marketing	176	35	19.89%	28.34%	Yes
Total	790	158	20.00%	28.34%	Yes

TABLE 6b XYZ Community College Enrollment Comparison 2006-2007, Hispanic Student Enrollment, CTE Programs

Program	Total # Enrolled	# Hispanics (unduplicated) Male and Female	% Hispanics	% Hispanics Enrolled in College	Falls between 11.56% and 31.56%?
Auto Mechanics	30	12	40.00%	21.56%	No, over
Carpentry	16	2	12.50%	21.56%	Yes
Cisco Academy	50	11	22.00%	21.56%	Yes
Commercial Horticulture	60	19	31.67%	21.56%	No, over
Tool and Die	95	27	28.42%	21.56%	Yes
Banking and Finance	124	32	25.81%	21.56%	Yes
LPN	60	6	10.00%	21.56%	No, under
Childcare	45	0	0.00%	21.56%	No, under
Respiratory Therapist	30	4	13.33%	21.56%	Yes
Total	510	113	22.16%	21.56%	Yes

At the postsecondary level, Auto Mechanics is attracting a higher percentage of Hispanic students than might be expected given the percent of Hispanic students enrolled in the college. All of the other programs are recruiting what is expected with the exception of the LPN and Childcare programs, where there is underrepresentation of Hispanic students. Again, the overall CTE program enrollment of Hispanic students is very close to the percentage of Hispanic students enrolled in the college.

CTE Nontraditional Program Enrollment: Race/Ethnicity Comparisons

Tables 7a and 7b look only at those programs that are nontraditional or where the workforce for which these programs prepare students have 25% or less of one gender. Those marked with an (F) are nontraditional for females and those with an (M) are nontraditional for males. Again, these show us only the distribution of Hispanic students, both male and female, in these programs. At the secondary level, this shows that the number of Hispanic students enrolled in the nontraditional programs for females is considerably lower than the percentage of students enrolled in the district, while the number of Hispanic students enrolled in the nontraditional programs for males is just slightly higher than the district's enrollment of Hispanic students. At the postsecondary level, it is just the opposite. The number of Hispanic students in the nontraditional programs for females is closer to the representation of Hispanic students in the college or in CTE, while the Hispanic students tend to be underrepresented in the nontraditional programs for males.

TABLE 7a XYZ Secondary School District Enrollment Comparison 2006-2007—Hispanic Student Enrollment, Nontraditional CTE Programs

Program	Total # Enrolled	# Hispanics (unduplicated) Male and female	% Hispanics	% Hispanics Enrolled in District[26]	Falls between 18.34% and 38.34%?	% of Hispanics Enrolled in CTE[27]	Falls between 10.00% and 30.00%?
Agriculture (F)	225	19	8.44%	28.34%	No, under	20.00%	No, under
Automotive Technology (F)	185	47	25.40%	28.34%	Yes	20.00%	Yes
IT Academy (F)	24	1	4.17%	28.34%	No, under	20.00%	No, under
Total for Females	434	67	15.54%	28.34%	No, under	20.00%	Yes
Nurse's Aide (M)	35	9	25.71%	28.34%	Yes	20.00%	Yes
Business and Office (M)	145	47	6.21%	28.34%	No, under	20.00%	No, under
Total for Males	180	56	31.11%	28.34%	Yes	20.00%	No, Over
Totals	614	123	20.03%	28.34%	Yes	20.00%	Yes

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[26]From Table 2a.
[27]From Table 5a.

TABLE 7b XYZ Community College Enrollment Comparison 2006-2007—Hispanic Student Enrollment, Nontraditional CTE Programs

Program	Total # Enrolled	# Hispanics (unduplicated) Male and Female	% Hispanics	% Hispanics Enrolled in College[28]	Falls between 11.56% and 31.56%?	% Hispanics Enrolled in CTE[29]	Falls between 12.15% and 32.15%?
Auto Mechanics (F)	30	12	40.00%	21.56%	No, over	22.15%	No, over
Carpentry (F)	16	2	12.50%	21.56%	Yes	22.15%	Yes
Cisco Academy (F)	50	11	22.00%	21.56%	Yes	22.15%	Yes
Commercial Horticulture (F)	60	19	31.67%	21.56%	No, over	22.15%	Yes
Tool and Die (F)	95	27	28.42%	21.56%	Yes	22.15%	Yes
Total in Nontraditional for Females	251	71	28.29%	21.56%	Yes	22.15%	Yes
LPN (M)	60	6	10.00%	21.56%	No, under	22.15%	No, under
Childcare (M)	45	0	0.00%	21.56%	No, under	22.15%	No, under
Total in Nontraditional for Males	105	6	5.71%	21.56%	No, under	22.15%	No, under
Total for Males and Females	356	77	21.63%	21.56%	Yes	22.15%	Yes

CTE Nontraditional Program Enrollment: Race/Ethnicity and Underrepresented Gender Comparisons

Tables 8a and b show that all programs at both the secondary and postsecondary levels are not meeting the state negotiated performance measure. Business and Office at the secondary level comes the closest as does Cisco Academy at the postsecondary level. The distribution of students at the secondary level shows that more underrepresented males are enrolling in nontraditional programs for males than are females in nontraditional programs for females. At the postsecondary level, it is the opposite, with more females in nontraditional programs for females than males in nontraditional programs for males.

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[28]From Table 2b.
[29]From Table 5b.

TABLE 8a XYZ Secondary School District Enrollment Comparison 2006-2007―Underrepresented Gender, Hispanic Student Enrollment, Nontraditional Programs

Program	Total # Hispanics Enrolled[30]	# Underrepresented Gender	% Underrepresented Gender	State Negotiated Performance Measure	Met = M Not Met = N Exceeded = E
Agriculture (F)	19	3	15.79%	24.56%	N
Automotive Technology (F)	47	2	4.25%	24.56%	N
IT Academy (F)	1	0	0.00%	24.56%	N
Total for Females	67	5	7.46%%	24.56%	N
Nurse's Aide (M)	9	2	22.22%	24.56%	N
Business and Office (M)	47	23	48.94%	24.56%	E
Total for Males	56	25	44.64%	24.56%	E
Total for Males and Females	123	30	24.39%	24.56%	N

TABLE 8b XYZ Community College Enrollment Comparison 2006-2007―Underrepresented Gender Student Enrollment, All Nontraditional Programs

Program	Total # Hispanics Enrolled[31]	# Underrepresented Gender[32]	% Underrepresented Gender	State Negotiated Performance Measure	Met = M Not Met = N Exceeded = E
Auto Mechanics (F)	12	2	16.67%	11.75%	E
Carpentry (F)	2	0	0.00%	11.75%	N
Cisco Academy (F)	11	5	45.45%	11.75%	E
Commercial Horticulture (F)	19	2	10.53%	11.75%	N
Tool and Die (F)	27	0	0.00%	11.75%	N
Total in Nontraditional for Females	71	9	12.68%	11.75%	E
LPN (M)	6	2	33.33%	11.75%	E
Childcare (M)	0	0	0.00%	11.75%	N
Total in Nontraditional for Males	6	2	33.33%	11.75%	E
Total for Males and Females	77	11	14.28%	11.75%	E

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[30]From Table 7a.

[31]From Table 7b.

[32]Number of students who are of the underrepresented gender for that particular program. For those with (F), it would be the number of females in the program. For those with (M), it would be the number of males in the program.

When looking at data for subgroups, it is important to use the information required for both civil rights AND for Perkins accountability so that the appropriate questions can be raised and strategies sought for improvement in the recruitment and retention of underrepresented gender students regardless of their racial/ethnic background or special population status. All of the disaggregated data is useful in having an overall picture of participation in the nontraditional programs. Recruitment strategies, such as information sharing with students and parents, can be identified so that students from various subgroups can see the advantages of particular nontraditional programs.

SECTION III

USING THE 5-STEP MODEL FOR CREATING LOCAL IMPROVEMENT PLANS FOR NONTRADITIONAL PARTICIPATION AND COMPLETION

SAMPLE 5-STEP MODEL FOR A LOCAL AUTOMOTIVE TECHNOLOGY PROGRAM

The accountability measures in the Perkins CTE legislation have meaning when the data is used by local agencies for improvement purposes. This model uses the data to guide the local school/district/agency to *determine root causes, select best solutions, consider pilot test approaches, and implement solutions.* This section is specifically focused on assisting local program personnel assess the performance of their programs on increasing the participation and completion of underrepresented gender students in nontraditional CTE programs. Improving Performance: A Five Step Process[33], was developed in 2002 by the Office of Vocational and Adult Education of the U.S. Department of Education as part of the Program Quality Initiative. This guidebook is generic to all the Perkins performance measures and describes each of these steps in detail and is referenced throughout the worksheet.

What is your state's measurement definition for participation in nontraditional CTE programs?

State Performance Measure: Nontraditional Participation
Numerator: Total number of underrepresented gender students participating in nontraditional CTE programs
Denominator: Total number of students participating in nontraditional CTE programs

State Performance Measure: Nontraditional Completion
Numerator: Total number of underrepresented gender students completing nontraditional CTE programs
Denominator: Total number of students completing nontraditional CTE programs

This section will demonstrate the use of a continuous process for improving performance on the participation and completion of underrepresented gender students in nontraditional career and technical education (CTE) programs. A nontraditional program (or course of study) is one where more than 75% of the workers in the occupation for which the program prepares students are of one gender. The list of nationally recognized nontraditional occupations for males and females and their related Classification of Instructional Program (CIP) codes can be found in Appendix A.

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[33]Improving Performance: A Five Step Process is available at http://www.edcountability.net/downloads/Guidebook.DOC

For the purposes of this sample, we will focus on analyzing data and developing improvement strategies for underrepresented gender students (females) in a specific nontraditional program (Automotive Technology). We will look at data to develop a plan at the program level. This same process can be used to analyze district- or college-level data for all programs by gender, race/ethnicity, and/or special population to determine gaps in performance by population[34]—just follow the same STEPS!

At the end of this example, you will find a worksheet with blank charts and instructions for completing the 5-step process to use at the local level to develop a local improvement plan for your program.

DISTRICT/COLLEGE PERFORMANCE DATA FOR PERKINS NONTRADITIONAL PARTICIPATION AND COMPLETION

When embarking on the process of collecting Perkins data on the performance of underrepresented gender students in nontraditional CTE programs, there are some very important steps you must take to ensure the data collected is accurate, valid, and reliable. See Section I: Steps to Collecting and Reporting Valid and Reliable Data on Nontraditional Participation and Completion to ensure you are collecting the appropriate data for the analysis to follow.

Each local education agency (district or college) collects and reports data to the state, which includes the data in an annual submission (Consolidated Annual Report [CAR]) to the U.S. Department of Education, Office of Vocational and Adult Education. Check with your state Director of Career and Technical Education to obtain a copy of your state's CAR. The state's CAR includes aggregate data for all programs in the state on the performance of students on each of the core indicators disaggregated by gender, race/ethnicity, and special population status. The CAR also indicates the state's negotiated performance measure (NPM) for each core indicator and whether or not the state met its NPM for that year. Information on your state's performance and narrative from the CAR is available online at http://edcountability.net.

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[34]For more detailed information on how to analyze student data by gender, race/ethnicity, or special population see Section II Promoting Equity in Career and Technical Education Through Data Analysis

States collect data from local education agencies (LEAs) to report on the CAR in different ways. If your state's accountability systems are designed to collect individual student records from LEAs, you may be able to request that data be reported back to you by school and program to help you conduct the analysis described here. If your state collects data at the school level, you will need to obtain your school's CTE annual report from your Director of CTE or other school administrator that collects and keeps this information. No matter how data is collected in your state, you should be able to access the information used in this analysis from records available at your school. Before starting on the 5 Step Process be sure to have at a minimum the data described in the tables below.

Sample Table 1: Nontraditional Participation by Program

Sample Tables 1a and 1b report enrollment data for the Automotive Technology Program for the 4 years from 2002-2003 through 2005-2006 of the Perkins Act, as well as by course for the 2005-2006 academic year. These tables reflect the comparison to the state negotiated performance measure.

SAMPLE TABLE 1a Nontraditional Participation for Automotive Technology over Time

Years	Total # Enrolled	# Underrepresented Gender[35]	% Underrepresented	State Negotiated Performance Measure	Met = M Not Met = N Exceeded = E
2005-2006	30	2	6.67%	11.75%	Not Met
2004-2005	32	2	6.25%	11.50%	Not Met
2003-2004	30	1	3.33%	11.25%	Not Met
2002-2003	32	0	0%	11.00%	Not Met

SAMPLE TABLE 1b Automotive Technology Participation, 2005-2006

Course	Total # Enrolled	# Underrepresented Gender	% Underrepresented Gender	State Negotiated Performance Measure	Met = M Not Met = N Exceeded = E
Electricity, Electronics, and Computer Controls	26	2	7.69%	11.75%	N
Transmissions and Power Trains	24	0	0.00%	11.75%	N
Engine Performance, Diagnosis, and Tune-Up	26	2	7.69%	11.75%	N

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[35]Number of students who are nontraditional for that particular program. Since Automotive Technology is nontraditional for females, the nontraditional students enrolled are the females in this example.

Basic Automotive Engines	30	0	0.00%	11.75%	N
Manual Transmissions and Power Trains	26	2	7.69%	11.75%	N
Technical Mathematics	24	0	0.00%	11.75%	N
Total (unduplicated)	30	2	6.67%	11.75%	N

Sample Tables 2a and 2b report completion data over time from 2002-2003 through 2005-2006 and the completion data by course for the academic year 2005-2006.

SAMPLE TABLE 2a Nontraditional Completion for Automotive Technology over Time

Year	Total # Completing	# Underrepresented Gender	% Underrepresented Gender	State Negotiated Performance Measure	M = Met N = Not Met E = Exceeded
2005-2006	30	2	6.67%	6.25%	E
2004-2005	32	0	0.00 %	6.00%	N
2003-2004	30	0	0.00 %	5.75%	N
2002-2003	32	0	0.00%	5.50%	N

SAMPLE TABLE 2b: Automotive Technology Completion, 2005-2006

Course	Total # Completing	# Underrepresented Gender[36]	% Underrepresented Gender	State Negotiated Performance Measure	Met = M Not Met = N Exceeded = E
Electricity, Electronics, and Computer Controls	26	2	7.69%	6.25%	E
Transmissions and Power Trains	24	0	0.00%	6.25%	N
Engine Performance, Diagnosis, and Tune-Up	26	2	7.69%	6.25%	E
Basic Automotive Engines	30	0	0.00%	6.25%	N
Manual Transmissions and Power Trains	26	2	7.69%	6.25%	E
Technical Mathematics	24	0	0.00%	6.25%	N
Total (unduplicated)	30	2	6.67%	6.25%	E

STEP 1: DOCUMENT PERFORMANCE GAPS

The first step in improving nontraditional CTE programs is to determine how well students are performing on state accountability measures. This is only one piece of information needed to answer the question "Why are there performance gaps?" However, student performance data can help educators and stakeholders to identify the areas that need further exploration to:

- understand the factors that contribute to students' success in nontraditional CTE programs,
- assess the success of strategies utilized to enroll and graduate students in programs leading to nontraditional careers, and
- identify other improvement priorities and strategies.

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[36]Number of students who are of the underrepresented gender for that particular program. Since Automotive Technology is nontraditional for females, the underrepresented gender students completing are the females in this example.

1.1 First Impressions: What do the Data Appear to Say?

Based on your review of the data presented above, does it appear that your institution has a performance gap that requires immediate attention? Are all student groups successful in meeting the state performance measure?

Participation Data Looking at the historical data for this program we see a slow increase in the participation of women in the program. In the last 2 years, two women have enrolled each year in the program. While the program does not meet the state negotiated performance measure, there has been a steady—albeit slow—increase in this area. The data could indicate that there have been five women in the program over the last 3 years.

Looking at the enrollment data for the 2005-2006 year, we see that women have enrolled in three courses: Electricity, Electronic, and Computer Controls; Engine Performance, Diagnosis, and Tune-up; and Manual Transmissions and Power Trains. Women have not enrolled in Transmissions and Power Trains, Basic Automotive Engines, and Technical Mathematics. It appears from the overall data that in 2004-2005 the two women enrolled in the program only took three of the six courses in the sequence, which is contradictory to the normal practice of enrolling in the full course sequence for this 1-year program.

Completion Data Looking at the historical completion data for this program, we see that no women had completed the program until the most current year. However, the completion of these two women in the program has caused the program's performance level to exceed the state's negotiated performance measure.

Looking at the completion data for 2005-2006, we see that women completed three courses: Electricity, Electronic, and Computer Controls; Engine Performance, Diagnosis, and Tune-up; and Manual Transmissions and Power Trains. No women have completed Transmissions and Power Trains, Basic Automotive Engines, and Technical Mathematics. We also see that two women completed the overall program sequence. Are these the same women who were enrolled in the three aforementioned courses? How did they complete when they only took three of the six courses in the sequence? Were they the same two women that were enrolled in 2004-2005? We must look further to find out more!

1.2 Data Quality: How Do I Know That I Can Trust My Data?

Since all data are limited in some respects, it is important to consider the accuracy of your data to ensure that what you say is happening is a true reflection of student performance and not simply a problem of limited data quality.

a. **Indicate any concerns that you might have regarding the data presented above.** *Since this is program-level data and the instructor has verified its validity there are no concerns.*

b. **Timing of measurement refers to when outcomes are measured among students. Do programs within your institution collect data using the same timetable?** *Yes, all data for participation is collected at the time of enrollment, and all data for completion is collected at the end of the term based on credits earned.*

c. **Reliability refers to the extent to which performance measurement is conducted in a consistent manner—data are reliable when repeated measurements yield similar results. How reliable are reported data across programs within your institution?** *Data is very reliable as it is based on individual student records that are verified by instructors and the registrar's office prior to being reported.*

d. **Coverage refers to the extent to which performance measurement includes all students who are eligible to be counted. Are all eligible students included in your measure?** *All eligible students are counted.*

e. **What types of additional data could you use to assess the reliability of your data?** *N/A to this example.*

1.3 What other data or information do I need to make an accurate assessment of what this data is reflecting?

The instructor knows that these two women started the program in 2003-2004 but had to take classes part-time due to their responsibilities for children and work. The instructor also knows that the

ability to work and go to school part-time enabled the women to complete the program. The completion data shows that two women completed the program in 2004-200 and the one woman enrolled in 2002-2003 did not complete the program. In looking at the state negotiated measure, it appears that the percentage of underrepresented students completing the program was half of the negotiated measure to enroll. The program enrolled two students, but both of these students graduated, and thus the completion measure was exceeded in 2004-2005.

Other information provided by the instructor included:

- *The female who dropped out did so because of the lack of support for her participation in the program. She reported behavior in the classroom, particularly in the labs, that made her feel very uncomfortable.*
- *All three of the female students reported that they were in the program despite the assistance they received in the career counseling office. While they were told they could do whatever interested them, they were given many reasons why they would be better off in other career areas.*
- *All students reported that the information they received about the program clearly showed that this was an occupation for males. A review of the materials supported this impression by the students.*

The instructor has information about the class enrollment and completion trends because the instructor knows his/her students. In this example, studying part-time meant that the women could remain in the program. What the data does not tell us is what other strategies the instructor utilized to help these women "stay the course." In program planning and implementation, it is essential that the instructional staff look at the data and provide the needed information. It would have been helpful if the woman who left and the two women who completed the program had been interviewed upon exit/completion. If the college does not perform exit interviews on a regular basis, then a follow up call from the instructor with a structured questionnaire would provide further information as to what elements led to the one dropout and the two completions.

Other data that may be helpful includes:

- *Disaggregated data on student career interest assessment inventories if they are given in the school and the results are available for analysis*
- *Student demographic data disaggregated for socioeconomic status, GPA, participation in upper-level math courses*
- *Students' parents' employment and industry sectors where employed. The information about parent employment and industry sectors can be very helpful as the research shows that children of parents employed in nontraditional fields are more likely to enter them as well.*
- *Student program interest as indicated by participation in program orientation events or campus open-house programs*
- *Participation of girls in feeder high school automotive technology courses*
- *Identification of women students who have automotive technology courses on their high school or transfer transcripts*

STEP 2: IDENTIFY ROOT CAUSES

The second step in the program improvement model will assist you in identifying and evaluating the root causes of the participation and completion trends to help guide your search for solutions. Questions you will seek to answer include "Why do participation and completion gaps exist?" and "What are the root causes that influence these patterns and how much control do we have over them?"

NOTE: For the purpose of this exercise, we will limit our search for root causes to two methods: (1) Brainstorming and (2) Reviewing the Research Literature. In practice, you might also consider other methods for identifying root causes, such as Analyzing Student Data or Conducting Focus Groups. See the list on page 15 of the **Five Step Process Guidebook**[37] for an explanation of the different methods you might use to identify root causes.

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[37] Available at http://www.edcountability.net/downloads/Guidebook.DOC

2.1 Identify Root Causes

Using the literature review,[38] identify at least three major root causes that researchers suggest affect participation in nontraditional programs. We'll take into consideration our sample data and the information that we have from the instructor.

1. *Career guidance materials and practices*

2. *Instructional strategies*

3. *Peer Influence*

4. *Occupational choice*

5. *Access to and participation in math, science, and technology*

6. *School climate*

The root causes affecting completion of nontraditional programs for our sample include:

1. *Classroom climate*

2. *Student isolation based on gender*

3. *Support services*

4. *Instructional strategies*

5. *Role models*

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[38]See http://www.nccte.org/publications/infosynthesis/r&dreport/Improving_Performance_of_Perkins_III.pdf, pages 61-86, Tables 16 and 17 for Root Causes for Participation in Nontraditional CTE Programs and Tables 19 and 20 for Root Causes for Completion of Nontraditional CTE Programs.

2.2 Analyzing and Evaluating Potential Causes

Select the three root causes that you believe are most critical to improving student performance and enter them in the space below. Review pages 16–17 in your **Five Step Process Guidebook[39]** to clarify the steps you should follow in evaluating these causes in order to identify one upon which you will focus your efforts.

Root Causes and Participation:

1. career guidance materials and practices

2. occupational choice

3. instructional strategies

Given the information available to us, the three root causes that are most critical to improving the completion of female students (the underrepresented gender) in this nontraditional program include the following. These causes have been prioritized so that we can focus our improvement efforts.

Root Causes and Completion

1. Student isolation based on gender

2. Support services

3. Instructional strategies

These root causes were chosen because of the information from the data and from the instructor's conversations with the female students in the program over the last several years. The women in the program indicated that they were in the program despite the career guidance and counseling they had received—they were not encouraged to participate in program. The two women who completed the program indicated that if they hadn't taken the course "together," they would not have completed it. The instructor convinced the CTE program coordinator to let the women study on a part-time basis, allowing them to complete the program in 2 years rather than in the usual 1 year. All the women complained about the lack of support that the institution gave them for taking the nontraditional route.

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[39] Available at http://www.edcountability.net/downloads/Guidebook.DOC

STEP 3: SELECT BEST SOLUTIONS

Once you have identified the most critical root causes to address in your improvement effort, the next step is to identify and select the solutions that seem most promising for implementation and evaluation.

To focus your work, in the space below write the single most critical root cause you believe affects the outcome of the nontraditional indicators.

Participation:

Completion:

> NOTE: Since many root causes can combine to affect performance outcomes, in practice you might choose to address a number of root causes simultaneously. To simplify the process, we will focus on only one root cause for this exercise.

3.1 Arraying the Solutions

Based on your own experience and review of the literature,[40] identify possible solutions to the root cause you identified.

Participation:

1. *Review career guidance materials and practices for gender bias and nontraditional exposure and support.*

2. *Conduct pre-technical training programs.*

3. *Conduct professional development for counselors on outreach to women in auto technology.*

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[40]See http://www.nccte.org/publications/infosynthesis/r&dreport/Improving_Performance_of_Perkins_III.pdf, pages 61-86, Table 18 for Improvement Strategies for Participation in Nontraditional CTE Programs and Table 21 for Improvement Strategies for Completion of Nontraditional CTE Programs.

Completion:

1. *Conduct nontraditional student support groups and peer counseling.*

2. *Provide a continuum of support services.*

3. *Evaluate all school materials for gender bias and positive nontraditional images.*

3.2 Narrowing the Choices

Select the most promising of these potential solutions, and answer the following questions about your choice. Review pages 21-22 of the **Five Step Process Guidebook**[41] for a list of selection criteria.

Participation: Review career guidance materials and practices for gender bias and nontraditional exposure and support.

a. **How does your solution address the primary root cause you've identified?** *If we address the career guidance program from a collegial perspective, we can increase the probability that students will be encouraged to become a part of the nontraditional programs rather than discouraged. This approach must include the guidance staff in addressing the problem because the program wishes to meet the needs of all students and break down some of the gender stereotypes that staff may not be aware are impacting the participation trends in the program.*

b. **What evidence do you have that your solution might work?** *The research shows that the evaluation of materials and practices can provide the impetus for change in how program information is offered to students.*

c. **What other types of data might you use to make your decision?** *We will conduct staff focus groups on the perception of the guidance program and materials, and student questionnaire about what information is available to them about nontraditional programs, such as the wage advantage for women in the nontraditional fields.*

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[41] Available at http://www.edcountability.net/downloads/Guidebook.DOC

STEP 4: EVALUATE SOLUTIONS

Now that you have identified a set of promising solutions on which to base initial improvement efforts, you'll want to create an evaluation strategy that will allow you to assess how well the improvement strategies and models are working. This section will assist you in selecting practical evaluation designs and analysis tools that you can use to gauge the success of your improvement efforts.

4.1 Select Outcome Measures

To help track performance changes, develop two short- and long-term measures to provide some indication of the success of your improvement efforts.

List two short-term measures that focus on immediate results that must be achieved to eventually obtain results on increasing the participation or completion of underrepresented gender students in nontraditional CTE programs.

1. *Students will report more information available to them about nontraditional career options through the guidance program.*

2. *Counseling staff will report having access to more information and resources about nontraditional career options, which they can use with students through the guidance program.*

List two long-term measures to provide direct evidence of your success in improving performance on increasing the participation or completion of underrepresented gender students in nontraditional CTE programs.

1. *The number of underrepresented students enrolled in the Automotive Technology program will increase by at least two students every year after 2006-2007.*

2. *The number of underrepresented students completing the Automotive Technology program will meet or exceed the state's performance target every year after 2007-2008.*

4.2 Identify Data Sources

After selecting short- and long-term outcome measures, you will need to identify data sources and collection instruments that will allow assessment. Consult the list on page 27 of the **Five Step Process Guidebook**[42] and identify some methods of data collection you may wish to consider.

The long-term assessment will be available through the data-collection process for Perkins. The short term measures will be assessed through questionnaires developed by the counseling and instructional staff.

4.3 Support for Implementation

Since the outcomes of your improvement effort will depend upon it being successfully introduced, you will want to spend some time with program staff reviewing improvement purposes.

a. **Who will work with program staff to coordinate improvement efforts?** *The program coordinator for CTE programs will coordinate the efforts with the counseling staff and the instructional staff.*

b. **What types of supporting materials will need to be developed?** *Decisions will need to be made as to what tools will be used to assess the program and materials. Many tools are available and may need to be adapted to our program, but there is no need to reinvent the wheel.*

c. **How will implementation be assessed?** *Implementation will be assessed through the questionnaires from students and focus groups with staff. We may also wish to add a staff questionnaire.*

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[42] Available at http://www.edcountability.net/downloads/Guidebook.DOC

STEP 5: IMPLEMENTING SOLUTIONS

Congratulations! Now it is time to put your plan into action. Remember that collaboration is the key to successful implementation.

Goal: *Working with the guidance staff to identify areas needing more support of the participation and completion of females in this nontraditional program.*

Implementation Plan

What	Who	When	Results
Meet with guidance staff	*Administrator* *Instructor*	*Prior to school start*	*Met to explain the data and need for action. Asked for their assistance. Received with some reservation but agreed to work together to ensure program encourages nontraditional enrollments.*
Set up work plan	*Subgroup of counseling staff and instructional staff*	*September 15*	
Research possible evaluation materials for guidance materials	*Program coordinator for CTE*	*October 30*	
Select tool to use with printed materials	*Subgroup of counseling and instructional staff*	*November 10*	
Select tool to use with counseling practices	*Subgroup of counseling and instructional staff*	*November 10*	
Evaluation of materials completed	*Individuals will be given a set number of items to evaluate (see attached grid)*	*January 31*	
Results summarized for guidance and instructional staff	*Program Coordinator*	*February 28*	
Proposed steps to increase underrepresented gender in	*Subgroup of counseling and*	*April 10*	

What	Who	When	Results
nontraditional program based on information provided	*instructional staff*		
Develop plan for changes staff wishes to make and present to all guidance and program staff	*Subgroup representatives*	*April 30*	
Begin implementation	*ALL*	*May 1*	

Of course, it will take time to be able to identify whether or not these changes are successful. And it

is probably time to make another assessment and begin working on another strategy that might be

helpful. This is an additive model—one that is ongoing. It's also time to try another strategy to

increase the probability of the continued participation and completion of underrepresented students in

nontraditional programs.

5-STEP MODEL WORKSHEET

The accountability measures in the Perkins CTE legislation have meaning when the data is used by local agencies for improvement purposes. This model uses the data to guide the local school/district/agency to *determine root causes, select best solutions, consider pilot test approaches, and implement solutions.* This worksheet is specifically focused on assisting local program personnel assess the performance of their programs on increasing the participation and completion of underrepresented gender students in nontraditional CTE programs. Improving Performance: A Five Step Process[43], was developed in 2002 by the Office of Vocational and Adult Education of the U.S. Department of Education as part of the Program Quality Initiative. This guidebook is generic to all the Perkins performance measures and describes each of these steps in detail and is referenced throughout the worksheet.

What is your state's measurement definition for participation in nontraditional CTE programs?

State Performance Measure: Nontraditional Participation
Numerator: _____
Denominator: _____

State Performance Measure: 4th Core Nontraditional Completion
Numerator: _____
Denominator: _____

This worksheet will lead you through the use of a continuous improvement process for the participation and completion of nontraditional programs. A nontraditional program (or course of study) is one where more than 75% of the workers in the occupation for which the program prepares students are of one gender. The list of nationally recognized nontraditional occupations for males and

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[43]Improving Performance: A Five Step Process is available at http://www.edcountability.net/downloads/Guidebook.DOC

females and their related Classification of Instructional Program (CIP) codes can be found in

Appendix A.

DISTRICT/COLLEGE PERFORMANCE DATA FOR PERKINS NONTRADITIONAL PARTICIPATION AND COMPLETION

When embarking on the process of collecting Perkins data on the performance of underrepresented gender students in nontraditional CTE programs, there are some very important steps you must take to ensure the data collected is accurate, valid, and reliable. See Section I: Steps to Collecting and Reporting Valid and Reliable Data on Nontraditional Participation and Completion to ensure you are collecting the appropriate data for the analysis to follow.

Each local education agency (district or college) collects and reports data to the state, which includes the data in an annual submission (Consolidated Annual Report [CAR]) to the U.S. Department of Education, Office of Vocational and Adult Education. Check with your state Director of Career and Technical Education to obtain a copy of your state's CAR. The state's CAR includes aggregate data for all programs in the state on the performance of students on each of the core indicators disaggregated by gender, race/ethnicity, and special population status. The CAR also indicates the state's negotiated performance measure (NPM) for each core indicator and whether or not the state met its NPM for that year. Information on your state's performance and narrative from the CAR is available online at http://edcountability.net.

States collect data from local education agencies (LEAs) to report on the CAR in different ways. If your state's accountability systems are designed to collect individual student records from LEAs, you may be able to request that data be reported back to you by school and program to help you conduct the analysis described here. If your state collects data at the school level, you will need to obtain your school's CTE annual report from your Director of CTE or other school administrator that collects and keeps this information. No matter how data is collected in your state, you should be able to access the information used in this analysis from records available at your school. Before starting on the 5 Step Process be sure to have at a minimum the data described in the tables below.

TABLES 1 Participation

TABLE 1a District/College All Nontraditional Program Participation over Time

TABLE 1a All Nontraditional CTE Programs District/College: _____

Academic Year	Total # Participating	# Underrepresented Gender[44]	% Underrepresented Gender	State Negotiated Performance Measure	Met = M Not Met = N Exceeded = E

TABLE 1b District/College Nontraditional Program Participation by Program

*TABLE 1b All Nontraditional CTE Program Participation by Program - Year:*_____

Program	Total # Participating	# Underrepresented Gender	% Underrepresented Gender	State Negotiated Performance Measure	Met = M Not Met = N Exceeded = E
Total (unduplicated)					

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[44] Number of students who are of the underrepresented gender for that particular program. (e.g., men in nursing, women in automotive technology).

TABLE 1c Nontraditional Program Participation over Time

TABLE 1c Program _____

Academic Year	Total # Participating	# Underrepresented Gender[45]	% Underrepresented Gender	State Negotiated Performance Measure	Met = M Not Met = N Exceeded = E

TABLE 1d Nontraditional Participation by Program by Course

TABLE 1d Program: _____ *Year:* _____

Course	Total # Participating	# Underrepresented Gender	% Underrepresented Gender	State Negotiated Performance Measure	Met = M Not Met = N Exceeded = E
Total (unduplicated)					

,[45] Number of students who are of the underrepresented gender for that particular program. (e.g., men in nursing, women in automotive technology).

TABLES 2 Completion

TABLE 2a District/College All Nontraditional Program Completion over Time

TABLE 2a All Nontraditional CTE Programs District/College: _____

Academic Year	Total # Completing	# Underrepresented Gender	% Underrepresented Gender	State Negotiated Performance Measure	Met = M Not Met = N Exceeded = E

TABLE 2b District/College Nontraditional Program Completion by Program

TABLE 2b: All Nontraditional CTE Program Completion by Program - Year: _____

Program	Total # Completing	# Underrepresented Gender	% Underrepresented Gender	State Negotiated Performance Measure	Met = M Not Met = N Exceeded = E
Total (unduplicated)					

TABLE 2c Nontraditional Program Completion over Time

TABLE 2c: Program _____

Academic Year	Total # Completing	# Underrepresented Gender	% Underrepresented Gender	State Negotiated Performance Measure	Met = M Not Met = N Exceeded = E

TABLE 2d Nontraditional Completion by Program by Course

*TABLE 2d Program:*_____*Year:*_____

Course	Total # Completing	# Underrepresented Gender	% Underrepresented Gender	State Negotiated Performance Measure	Met = M Not Met = N Exceeded = E
Total (unduplicated)					

STEP 1: DOCUMENT PERFORMANCE GAPS

The first step in improving nontraditional CTE programs is to determine how well students are performing on state accountability measures. This is only one piece of information needed to answer the question "Why are there performance gaps?" However, student performance data can help educators and stakeholders to identify the areas that need further exploration to:

- understand the factors that contribute to students' success in nontraditional CTE programs,
- assess the success of strategies utilized to enroll and graduate students in programs leading to nontraditional careers, and
- identify other improvement priorities and strategies.

This section will assist you in documenting and understanding performance results, and help you to identify areas for improvement.

1.1 First Impressions: What Do the Data Appear to Say?

Based on your review of the data presented above, does it appear that your institution has a performance gap that requires immediate attention? Are all student groups successful in meeting the state performance measure?

1.2 Data Quality: How Do I Know That I Can Trust My Data?

Since all data are limited in some respects, it is important to consider the accuracy of your data to ensure that what you say is happening is a true reflection of student performance and not simply a problem of limited data quality.

a. **Indicate any concerns that you might have regarding the data presented above.**

b. **Timing of measurement refers to when outcomes are measured among students. Do programs within your institution collect data using the same timetable?**

c. **Reliability refers to the extent to which performance measurement is conducted in a consistent manner—data are reliable when repeated measurements yield similar results. How reliable are reported data across programs within your institution?**

d. **Coverage refers to the extent to which performance measurement includes all students who are eligible to be counted. Are all eligible students included in your measure?**

e. **What types of additional data could you use to assess the reliability of your data?**

1.3 What other data or information do I need to make an accurate assessment of what this data is reflecting?

STEP 2: IDENTIFY ROOT CAUSES

The second step in the program improvement model will assist you in identifying and evaluating the root causes of the participation and completion trends to help guide your search for solutions. Questions you will seek to answer include "Why do participation and completion gaps exist?" and "What are the root causes that influence these patterns and how much control do we have over them?"

> NOTE: For the purpose of this exercise, we will limit our search for root causes to two methods: (1) Brainstorming and (2) Reviewing the Research Literature. In practice, you might also consider other methods for identifying root causes, such as Analyzing Student Data or Conducting Focus Groups. See the list on page 15 of the **Five Step Process Guidebook**[46] for an explanation of the different methods you might use to identify root causes

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[46] Available at http://www.edcountability.net/downloads/Guidebook.DOC

2.1 Identify Root Causes

Using the literature review,[47] identify at least three major root causes that researchers suggest affect participation in nontraditional programs. We'll take into consideration our sample data and the information that we have from the instructor.

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

The root causes affecting completion of nontraditional programs include:

1. _____

2. _____

3. _____

4. _____

5 _____

2.2 Analyzing and Evaluating Potential Causes

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[47]See http://www.nccte.org/publications/infosynthesis/r&dreport/Improving_Performance_of_Perkins_III.pdf, pages 61-86, Tables 16 and 17 for Root Causes for Participation in Nontraditional CTE Programs and Tables 19 and 20 for Root Causes for Completion of Nontraditional CTE Programs.

Select the three root causes that you believe are most critical to increasing the participation of underrepresented gender students in nontraditional CTE programs and enter them in the space below. Review pages 16–17 in the **Five Step Process Guidebook**[48] to clarify the steps you should follow in evaluating these causes to identify one upon which you will focus your efforts.

Root Causes for Participation
1.

2.

3.

Select the three root causes that you believe are most critical to increasing the completion of underrepresented gender students in nontraditional CTE programs and enter them in the space below. Review pages 16–17 in your **Five Step Process Guidebook**[49] to clarify the steps you should follow in evaluating these causes to identify one upon which you will focus your efforts.

Root Causes for Completion
1.

2.

3.

2.3 Questions to Ask Yourself

a.   Theory: Is there a clear and compelling theory or rationale for each of these causes?

b.   Evidence: Is there strong evidence that one of these is a major cause of performance problems?

c.   Root or Indirect Cause: Are these causes direct or do they affect outcomes through a related cause?

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[48] Available at http://www.edcountability.net/downloads/Guidebook.DOC
[49] Available at http://www.edcountability.net/downloads/Guidebook.DOC

d. **Need: Is there any evidence to suggest that one of these causes is an obvious factor to be addressed?**

e. **Impact: Are there opportunities and resources to address each of these causes equally?**

f. **Stakeholder Support: Will major stakeholders support one of these causes over the others?**

STEP 3: SELECT BEST SOLUTIONS

Once you have identified the most critical root causes to address in your improvement effort, the next step is to identify and select the solutions that seem most promising for implementation and evaluation.

To focus your work, in the space below write the single most critical root cause you believe affects the outcome of the nontraditional indicators.

Participation:

Completion:

> NOTE: Since many root causes can combine to affect outcomes, in practice you might choose to address a number of root causes simultaneously.

3.1 Arraying the Solutions

Based on your own experience and review of the literature,[50] identify possible solutions to the root cause you identified.

Participation:

1. _____

2. _____

Completion:

1. _____

2. _____

3.2 Narrowing the Choices

Select the most promising of these potential solutions and answer the following questions about your choice. Review page 21-22 of the **Five Step Process Guidebook**[51] for a list of selection criteria.

a. How does your solution address the primary root cause you've identified?

b. What evidence do you have that your solution might work?

c. What other types of data might you use to make your decision?

STEP 4: EVALUATE SOLUTIONS

Now that you have identified a set of promising solutions on which to base initial improvement efforts, you'll want to create an evaluation strategy that will allow you to assess how well the

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[50] See http://www.nccte.org/publications/infosynthesis/r&dreport/Improving_Performance_of_Perkins_III.pdf, pages 61-86, Table 18 for Strategies for Participation in Nontraditional CTE Programs and Table 21 for Strategies for Completion of Nontraditional CTE Programs.

[51] Available at http://www.edcountability.net/downloads/Guidebook.DOC

improvement strategies and models are working. This section will assist you in selecting practical evaluation designs and analysis tools that you can use to gauge the success of your improvement efforts.

4.1 Select Outcome Measures

To help track performance changes, develop two short- and long-term measures to provide some indication of the success of your improvement efforts.

List two short-term measures that focus on immediate results that must be achieved to eventually obtain results on increasing the participation or completion of underrepresented gender students in nontraditional CTE programs.

1.

_____

2.

_____

List two long-term measures to provide direct evidence of your success in improving performance on increasing the participation or completion of underrepresented gender students in nontraditional CTE programs.

1.

_____

2.

_____

4.2 Identify Data Sources

After selecting short- and long-term outcome measures, you will need to identify data sources and collection instruments that will allow assessment. Consult the list on page 27 of the **Five Step Process Guidebook**[52] and identify some methods of data collection you may wish to consider.

4.3 Support for Implementation

Since the outcomes of your improvement effort will depend upon it being successfully introduced, you will want to spend some time with program staff reviewing improvement purposes.

a. Who will work with program staff to coordinate improvement efforts?

b. What types of supporting materials will need to be developed?

c. How will implementation be assessed?

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[52] Available at http://www.edcountability.net/downloads/Guidebook.DOC

STEP 5: IMPLEMENTING SOLUTIONS
Congratulations! Now it is time to put your plan into action. Remember that collaboration is the key to successful implementation.

Implementation Plan

What	Who	When	Results

What	Who	When	Results

Of course, it will take time to be able to identify whether or not these changes are successful. And it is probably time to make another assessment and begin working on another strategy that might be helpful. This is an additive model—one that is ongoing. It's also time to try another strategy to increase the probability of the continued participation and completion of underrepresented students in nontraditional programs.

APPENDIX A

National Nontraditional Occupations/CIP/Career Clusters/Pathways